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ON THE TRAIL OF THE GOLDEN FROG: WITH WARSZEWICZ AND GABB IN CENTRAL AMERICA

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Those who have viewed at first hand the steep, dark-green, forest-covered slopes of the Cordillera de Talamanca-Chiriquí of Costa Rica and Panamá, with their ever changing aspect of sun and cloud, moon and mist, bright blue sky and bright green mantle, driving rain and boiling fog, come away with a feeling of overpowering awe and mystery at the variety of nature and the magic of the human soul. It is not surprising that the primitive peoples in this region also regarded the mountains and their forests with mystical reverence, so near and yet towering abruptly upwards to 4,000 meters from their lowland valley habitations.

Among the Bribri, Cabécar, Boruca, Changina, and Chiriquí, when the chicha has been drunk, the night grows late and dark, and the fires die down to burning embers, the wisest old man of the tribe tells his engrossed listeners of a beautiful miraculous golden frog that dwells in the forests of these mystical mountains. According to the legends, this frog is ever so shy and retiring and can only be found after arduous trials and patient search in the dark woods on fog shrouded slopes and frigid peaks. However, the reward for the finder of this marvelous creature is sublime. Anyone who spies the glittering brilliance of the frog is at first astounded by its beauty and overwhelmed with the excitement and joy of discovery; almost simultaneously he may experience great fear. The story contin-

FIGURE 1. Upper, Josef Warszewicz, original by Artura Grottgera, now the property of the Department of Plant Geography, Jagellonian University, Krakow; lower, William M. Gabb, original, the property of the Academy of Natural Sciences of Philadelphia.

ues that any man who finds the legendary frog finds happiness, and as long as he holds the frog happiness will follow him everywhere. The story tellers record many men who have scaled the highest peaks and searched the darkest forests for even a glimpse of the golden frog, but only a few ever see it. Fewer still capture the cherished creature and hold him for a few moments, and a very few are able to carry him with them for a longer period of time. One story tells of the man who found the frog, captured it, but then let it go because he did not recognize happiness when he had it; another released the frog because he found happiness too painful.

Like the Indians of Talamanca and Chiriquí, each human being is also on a mission searching for the golden frog. Field biologists in particular seem always to be searching for mystical truth and beauty in nature, and frequently at some unperceived level, for that happiness promised by the Indian seers. The present paper is appropriately about two 19th Century scientists who joined this search in the very regions where the golden frog abounds, and we may assume that for a time, at least, they captured that joy guaranteed to beholders of the frog.

INTRODUCTION

Both Josef Warszewicz and William M. Gabb (fig. 1) were pioneer collectors of herpetological materials from lower Central America. Since they were among the first to sample the region, many of the animals they collected became types of previously undescribed species, most of which remain recognized as valid today. Neither of these men was a zoologist, and both collected in regions not visited again by herpetological collectors until the present century. Confusion and doubt as to the origin of their collections have clouded the issue of the validity of certain names and the synonymy of others subsequently described. In the present paper the routes followed by the two pioneers and the sources of their materials are delineated for the first time.

ACROSS THE GREAT DIVIDE: WARSZEWICZ IN WESTERN PANAMA

Josef Warszewicz was born in Litwie (Wilno), Poland in 1812. He apparently studied some botany at the University of Kraków. He took part in the Polish Revolution against Russia of 1830–31 and rose to the rank of officer. After the defeat of the Polish insurgents he left Poland. From 1840–1844 he worked as a gardener in the Botanical Gardens in Berlin. There he came to the attention of a Belgian, Van Houtte de Gandawy, who owned a large garden in Santo Tomás (St. Thomas), now Matías de Galvéz, Guatemala. Warszewicz was sent to inventory the garden and to collect materials for Belgian gardens. He sailed from Europe, December 5, 1844, and was active in Guatemala by March 1, 1845. He added many local species to his employer's gardens and in 1846 began work for himself, and forwarded living and dry plants, especially orchids, to Europe. In 1848

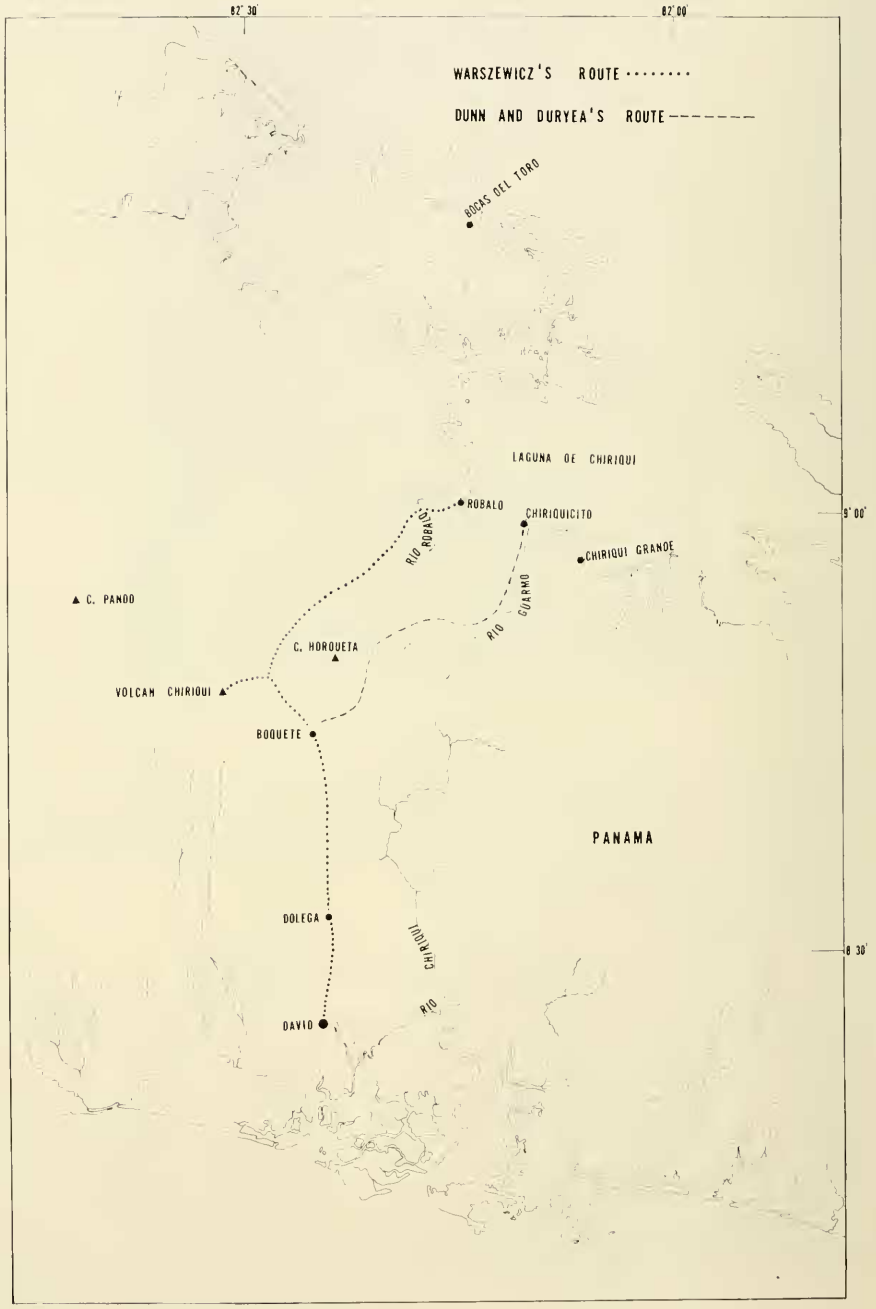

FIGURE 2. Map of western Panamá, showing Warszewicz' route across the Continental divide and principal localities discussed in text.

Warszewicz undertook a major trip through Central America. He traveled by land from Guatemala to San José, Costa Rica, where he was situated by February, 1848. On March 1, he climbed Volcán Irazú. Later he arrived in western Veragua (Chiriqui), Panamá, where he climbed Volcán Chiriquí and crossed over to the Caribbean coast. Most of the amphibians and reptiles collected by Warszewicz were taken in western Panamá. In 1851 he was again in the Chiriquí region and later that year he proceeded to South America, being in Guayaquil, Ecuador, at the end of the year. Warszewicz spent 1852 in South America, primarily in Perú and Bolivia. He is known to have visited Lima, Perú, and was at La Paz, Bolivia, on June 15, 1852. At the end of the year, December 28, he was at Huancabamba on the headwaters of the Río Marañón, upper Amazon drainage, Departamento Piura, Perú. He returned to Germany in October 1853 and became Inspector of the Botanic Gardens in Kraków. He died there December 29, 1866. (Regal, 1867; Rouppert, 1927). A bust of Warszewicz was erected in the University Botanical Garden in Kraków about 1880, where it still stands.

Herpetological materials collected by Warszewicz were deposited at Berlin, Vienna, and Kraków. The last city had been made the capital of a small free state after the Napoleonic wars in 1815. In November 1846, it was annexed to the Austrian-Hungarian Empire, following a revolt in Poland. Through exchange, some specimens came to the museum at Munich and to the British Museum. The Central American specimens are all from Panamá and were taken in 1848 and 1851. The former collection seems to have gone to Kraków and Vienna, the last to Berlin. The long residence of Warszewicz in Berlin prior to his American travels explains deposition of specimens there, probably as the result of long-time contacts. Apparently he loaned and gave some material to the Vienna Museum on his establishment in Kraków in 1843, since the latter city was then part of the Austrian-Hungarian state. Fortunately Warszewicz' route through the Chiriquí massif may now be traced with some accuracy (fig. 2). Information provided by Wagner (1863) and his map clearly define the route from David on the Pacific slope across the divide to the Laguna de Chiriquí. Wagner records that Warszewicz penetrated the interior of Chiriquí and traversed the great Cordillera to the Atlantic shore. Regel (1867) noted that Warszewicz climbed the 16,000 foot Volcán Chiriquí in 1848. Wagner (1863), using the same guides and carriers employed by Warszewicz, followed the same trails to the Chiriquí highlands. This route runs from David through Dolega and then up to Boquete (1158m.), from where there were two trails leading to the Caribbean shore. One trail skirted the east slope of Volcán Chiriquí and continued to Ranchos de Róbalo, the other passed around the east slope of Cerro Horqueta and continued to the mouth of Cabbage Creek (Río Guarmo) near present day Chiriquí Grande. Warszewicz certainly followed the Boquete-Róbalo trail, since a branch from it leads to the top of Volcán Chiriquí (3478m.). Nevertheless, he may have returned via the other route. Emmett R. Dunn and Chester B. Duryea seem to have followed the

latter trail from Chiriquí Grande to Boquete, in 1923 when they became the first herpetologists to re-collect several of Warszewicz' species.

HERPETOLOGICAL SPECIMENS COLLECTED BY WARSZEWICZ

Most of the amphibians collected by Warszewicz were described by Oskar Schmidt (1857) and more extensively described and illustrated by him in 1858. The following are involved, with the Kraków Museum in the Department of Systematic Zoology, Jagellonian University (KM) numbers listed. These specimens were presented to the collection in 1870 and were examined by E. R. Dunn in 1928. Some of them are still extant. Location of other types and other Warszewicz material noted in preparation of this report is also indicated, but probably is not complete. Abbreviations for other collections are: Zoologisches Museum, Berlin (B); British Museum (Natural History), (BM); Zoologischen Museum, Hamburg (H); Zoologischen Staatssammlung in München (M); Naturhistorisches Museum Wien (W). An asterisk (*) indicates a new species.

Specimens Collected by Warszewicz

**Leiuperus sagittifer.* New Granada (Colombia).

**Ixalus warschewitschii.* KM 1006/1338; near Volcán Chiriquí, between 6000 and 7000 feet (4500–5250 feet = 1370–1600 m.).

**Hyla pugnax.* KM 1009/1339; Río Chiriquí near Bocas del Toro.

**Hyla splendens.* KM 1008/1340 ♀: Río Chiriquí near Bocas del Toro.

**Hyla molitor.* KM 1010/1341, 2 ♂ ♂; W 16494, female designated as lectotype by Savage and Heyer (1969): Río Chiriquí near Bocas del Toro.

**Hyla molitor marmorata.* KM 1010/1342 ♀: Río Chiriquí near Bocas del Toro.

**Hylodes fitzingeri.* KM 1012/1343; Mountains of New Granada (Panamá), 4000 feet (3000 feet = 915 m.); now lost.

**Dendrobates speciosus.* KM 1017/1345 nine specimens; W one specimen: trail between Bocas del Toro and Volcán Chiriquí, 5000–7000 feet (3777–5250 feet = 1150–1600 m.); now lost.

**Dendrobates pumilio.* KM 1018/1346: trail between Bocas del Toro and Volcán Chiriquí, 5000–7000 feet (3777–5250 feet = 1150–1600 m.); now lost.

**Dendrobates lugubris.* KM 1016/1347: trail between Bocas del Toro and Volcán Chiriquí, 5000–7000 feet (3777–5250 feet = 1150–1600 m.); now lost.

Bufo margaritifer. Between Bolivia and Perú, 3000 feet (2250 feet = 685 m.).

**Bufo pleuropterus.* KM 1030/1348: between Bolivia and Perú, 3000 feet (2250 feet = 685 m.).

**Bufo veraguensis.* KM 1032/1350; New Granada, Provincia de Veragua.

**Bufo simus.* BM 95–9–14.6; H 1527; KM 1029/1351, 5 specimens (now lost); M 543/20; W 16521: Río Chiriquí near Bocas del Toro.

**Hylaemorphus dumerilii.* KM 1014/1345: New Granada, Provincia de Chiriquí, 8000 feet (6000 feet = 1830 m.).

**Hylaemorphus bibronii.* KM 1015/1355; New Granada near Panamá, 2000–3000 feet (1500–2500 feet = 460–760 m.).

**Phirix pachydermus.* KM 1013/1356; Western New Granada near Buenaventura, 5000 feet (3777 feet = 1150 m.); now lost.

Other specimens collected by Warszewicz.
At Kraków:

Basciliscus mitratus. KM 932/1317 America.
Stenostoma albifrons. KM 962/1296 America.
Cyclophis aestivus. KM 981/1270 America.
Pelamis bicolor. KM 989/1304 Pacific Sea.
Lacerta muralis viridis. KM 1019/1270 America.
Bufo vulgaris. KM 1020 America.
Phyllomedusa hypochondrica. KM 1024/1344 Guyana.
Bufo chilensis. KM 1031/1349 Bolivia.

At Berlin:

**Rhinotyphlops albirostris*. B 9529, 2 specimens; Veragua (Peters, 1857).
**Anolis humilis*. B 500; Veragua (Peters, 1863a).
**Anolis intermedius*. B 503; Veragua (Peters, 1863a).
**Hyla sordida*. B 3141; Veragua (Peters, 1863c).
**Hyla punctariola*. B 4918; Veragua (Peters, 1863c).
**Strabomantis biporcatus*. B 3222, 3330; Veragua (Peters, 1863b).
Bufo haematiticus. B 3404; Veragua.
Bufo typhonius. B 3442; Veragua.

Most of the animals collected by Warszewicz are from what is today western Panamá, but in his time constituted the Provincia de Veragua of the country of Nueva Granada (Colombia). Today the old Veragua comprises the Provincias de Veraguas, Chiriquí, and Bocas del Toro. In Warszewicz' day, western Veragua was called Chiriquí and the Atlantic lowlands were called Bocas del Toro. Several corrections seem necessary in dealing with the data associated with his specimens. First, all altitudes listed are extremely high and well above the known distributions for the species. As I have previously pointed out (Savage, 1968) 19th Century Polish feet contained the equivalent of only nine English inches. Therefore I have given the corrected elevations in parentheses above. Regel's (1867) report of Warszewicz' climbing 16,000 foot Volcán Chiriquí as previously cited shows the same point, since the mountain is 3478m. (11,311 feet) in height. Even these figures are out of the altitudinal range for several species, but since they were probably estimated, the differences are not extreme after the corrections have been made.

Several forms described from Warszewicz' materials by Oskar Schmidt have never been retaken in Central America but, because of the lack of details regarding his route and the inaccessibility of the area on the continental divide visited by him, herpetologists have assumed that these animals would ultimately be rediscovered in the field. Recently, I (Savage, 1969) demonstrated that one species, *Bufo veraguensis,* was based on a mislabeled Peruvian or Bolivian toad. At least three others, *Hyla splendens, Hyla molitor,* and *Hyla molitor marmorata* may similarly be removed from any list of Central American amphibians. Savage

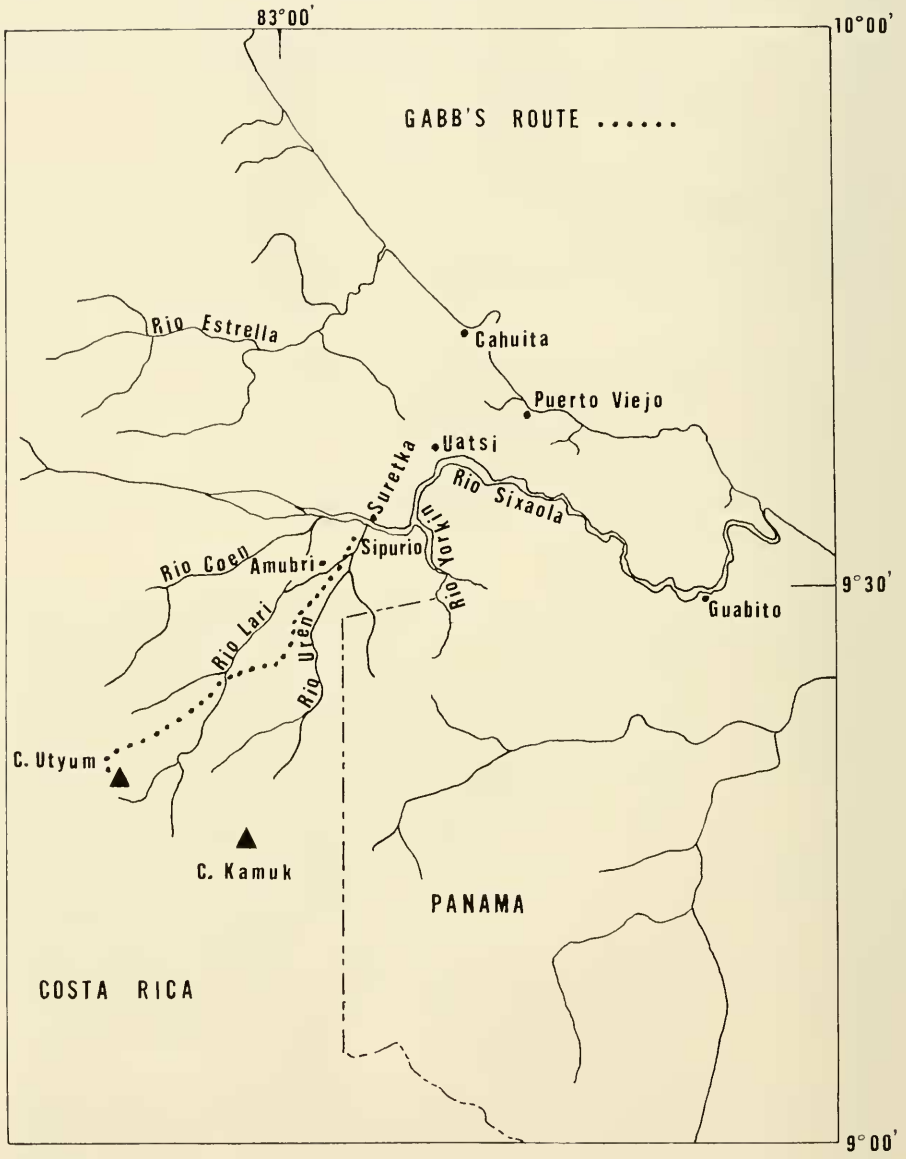

Figure 3. Map of southeastern Costa Rica, indicating area of Gabb's collections and the route followed in his ascent of Cerro Utyum.

and Heyer (1969) have shown that the latter two are totally unlike any Central American forms. Very likely they are also mislabeled South American frogs. The type of *Hyla splendens* appears to be a female of the genus *Gastrotheca*. Charles F. Walker, the leading student of this genus, informs me that the type is very similar to some Peruvian *Gastrotheca* species and unlike any Panamanian or Colombian form.

GABB AND THE EXPLORATION OF THE TALAMANCA

William More Gabb was born in Philadelphia on January 20, 1839. He is the subject of a biographical memoir of the National Academy of Science (Dall, 1909). Only details omitted from the memoir or matters directly related to his Central American experience are recounted here. Gabb was interested in geology and mineralogy and became associated with the California Geological Survey in 1862. As part of this work he spent the period 1862–1867 in California and was involved in the Survey's study of Baja California in the latter year. In 1869–1870 Gabb was active in geological work in Santa Domingo.

Gabb came to Costa Rica in February, 1873, to undertake a study of the geography, geology, resources, and climate of the southeastern section of the country, the Talamanca (fig. 3). During the 19 months of his contract, 17 were spent in the field (until August, 1874). He returned to the United States in 1876 whence he again visited Santa Domingo. Malaria apparently contacted in Costa Rica was inflamed in Santa Domingo and he ultimately succumbed to tuberculosis of the lungs after his final return to the United States in April, 1878. He died in Philadelphia May 30, 1878.

Gabb's fantastic activities during his Costa Rican stay are summarized in his reports (Gabb, 1875, 1877, 1913a, 1913b; Pittier, 1875, 1913). Most of his work was centered on the Valle de Talamanca, the region of the Río Sixaola drainage. The upper portion of this area: The Valle de Río Telire and the drainages of the Río Urén, Río Lari, Río Coen, Río Telire, and Río Taberi, forms Alta Talamanca. The lower part of the valley from a line between Uátsi and the mouth of the Río Yorkin to the coast is Baja Talamanca. The towering spires of the Cordillera de Talamanca border the Valle de Talamanca on the northwest. The Valle de Talamanca was the original Spanish settlement in Costa Rica, where La Ciudad de Santiago de Talamanca was founded, near the present site of Suretka (60m.) on October 10, 1605. In Gabb's day the central settlement of the area (it had the only church and was the home of Mr. John H. Lyon, an American, who had administrative responsibility for the district) was San Bernardo de Sipurio (70m.) between the Río Suedi and Río Urén about 3 miles above the mouth of the latter. This village and the Catholic church were destroyed by a flood of the Río Lari in 1909. A new mission was established at Amubri (75m.) in 1910 and serves as the central settlement in the area today. In 1873–74 about 1240 people lived in the

region. Gabb was accompanied on most of his many trips through the area by two Costa Rican collectors, Jose Zeledón and Juan Cooper, both later famous naturalists in their own right, who collected most of the vertebrates.

Gabb married an Indian girl, Victoria, and one son Guillermo was born to this marriage in 1874 or 1875. At least three grandchildren, Alfonso, Melania, and Francisco Gabb were alive in 1964 when I visited the Talamanca. Several great-grandchildren were also living including a Victoria Gabb, an exceedingly beautiful girl, who may have recalled the Indian beauty who married Gabb.

Gabb visited almost every locality in the valley. As part of his fieldwork (Gabb, 1913b: 105–106, 114; 120–122, 127–128) he attempted to climb Pico Blanco (Cerro Kámuk) the highest peak (3554m.) in the southern Talamanca-Chiriqui range. Gabb tells it all—"We followed hunter's trails over a long, narrow, and very crooked ridge between the *Urén* and the *Lari* to a place called *Bitsung-wo-ki,* often scaling precipices, climbing around rocks, and in some parts scrambling over bad places by means of ladders and bridges made of sticks placed there for this purpose. Beyond *Bitsung-wo-ki,* but two men had ever gone, and with one of them for a guide, we were forced to climb down to the *Lari* River, and ascend the mountains on the other side, to avoid impassable rocks. At the end of seven (7) days, we found ourselves on the side of a peak, which we ascended, made our observations, and returned." His party consisted of 21 persons and subsisted mainly on *plátanos.* They were on the peak June 13, 1873, after starting the ascent June 6.

Gutiérrez (1960) has conclusively shown that Gabb, by detouring up the Río Lari, actually ascended Cerro Utyum (3084m.) (Cerro Cruz del Obispo) rather than Kámuk. The route followed by Gabb, his altitude record for the peak, 9562 feet (2915m.), as well as his observations (1913b: 106) as pointed out by Gutiérrez (1960) and confirmed by Carballo (1960) who scaled Kámuk, substantiate this conclusion. Gabb apparently returned to Alta Talamanca via the Río Lari. I ascended the latter river in 1964 to a point approximately where Gabb crossed over the ridge from the Río Urén. This place is 3 days hard hiking from Amubri and lies at 800m., near the juncture of the Río Dipári and Río Lari.

In view of these data, none of Gabb's animals should be listed from Pico Blanco (Cope 1875, 1876) but rather from Cerro Utyum.

One of the principal supporters of Gabb's explorations was the legendary Costa Rican entrepreneur Minor C. Keith, then manager of what became the Costa Rican Northern Railroad, that today connects Puerto Limón and San José. Keith began the planting of bananas along the rail lines, originally to keep the railroad hands busy and to provide food. Gradually bananas became the basis for the development of the United Fruit Company. The Compañía Bananera began to exploit the Valle de Talamanca in 1916. Poor and thin soils led to reduction of activity in 1922. The Valle was abandoned to local farmers in 1925. A railroad that connected with the United Fruit Company lines in the Bocas del

Toro region of Panamá, at Guabito, formerly extended up river past Suretka. The bridge across the Río Sixaola above Suretka was washed out in 1925 and the rails abandoned. In 1964 the railroad still ran from Sixaola to Volio (Uátsi). A truck road connects Puerto Viejo and Cahuita to Fields where another truck road runs to beyond Suretka. A jeep trail runs north from this road to Pandora in the Valle de Estrella.

HERPETOLOGICAL SPECIMENS IN THE GABB COLLECTIONS

The herpetological materials from Gabb's explorations were deposited at the United States National Museum (US) and reported on by E. D. Cope (1875, 1876) in a large monograph. Many examples served as types of new taxa as indicated below by an asterisk (*). Cope's paper was originally published as a separate, with a limited letterpress run of 50 copies on November 26, 1876. The journal run (Cope, 1876) appeared early the next year. This original report on Gabb's material has been reissued as a special number of the journal *O'Bios* and may be purchased from the Departamento de Biologia, Ciudad Universitaria, Costa Rica. Because the Gabb material is well known I have indicated catalog numbers only for type materials. Unless otherwise denoted all specimens are from Provincia de Limón, Canton de Limón in Costa Rica.

Specimens Collected by Gabb

Siphonops mexicanus. Holotype, US 29762; Paratype US 29763; Limón (described as new species *Siphonops proximus* Cope, 1878).

Opheobatrachus vermicularis. One specimen from Cerro Utyum, 6000 feet (1830 m.); 2 examples from lower country 20 miles (30 km.) from Coast.

Oedipus moro ?. Eastern slope Cerro Utyum.

**Cranopsis fastidiosus*. Lectotype, US 32585; paratypes US 32584, 32586–87; Cerro Utyum, 2500 feet (760 m.).

**Crepidius epioticus*. Cerro Utyum, 5000 feet (1520 m.) (type lost), Savage and Kluge, 1961.

**Ollotis coerulescens*. Cerro Utyum, 3000–5000 feet (915–1520 m.) (type lost).

**Bufo auritus*. US 30676; east coast region (substitute name *Bufo gabbi* Taylor, 1952).

Bufo valliceps. US 30592; eastern Costa Rica (described as new species, *Bufo melanochloris* Cope, 1878).

Bufo agua. Eastern coast.

Bufo haematiticus. Sipurio.

Atelopus varius. Cerro Utyum and lower country.

Dendrobates typographus. Low country about 10 miles (15 km.) inland.

Dendrobates tinctorius. Lower country.

**Dendrobates talamancae*. Near Old Harbour on east coast (type lost).

**Hyla gabbii*. US 30658–59; near Sipurio.

**Hyla uranochroa*. US 30651; near Sipurio.

**Hyla nigripes*. US 30685–86; Cerro Utyum, 5000–7000 feet (1525–2135 m.).

**Hyla elaeochroa*. Lectotype, US 30689, paratypes US 30688, 30690; east foot of mountains near Sipurio.

**Hyla punctariola pictipes*. US 30652; Cerro Utyum, 5000–7000 feet (1525–2135 m.).

Hyla punctariola monticola. US 30661, Cerro Utyum.
Phyllobates hylaeformis. US 30687; Cerro Utyum, 7000 feet (2135 m.).
Lithodytes podiciferus. US 30662, 30665–75 (US 30663 now at Harvard, US 30664 now at Michigan); Cerro Utyum, 5000–7000 feet (1525–2135 m.).
Lithodytes muricinus. Cerro Utyum (type lost).
Lithodytes habenatus. Cerro Utyum (type lost).
Lithodytes melanostictus. US 30608; Cerro Utyum, 7000 feet (2135 m.).
Lithodytes megalocephalus. US 32578; spur of Cerro Utyum, 6000 feet (1830 m.).
Lithodytes gulosus. US 32590; spur of Cerro Utyum, 6000 feet (1830 m.).
Hylodes cerasinus. US 32572; eastern slope of Cerro Utyum.
Gnathophysia ocellaba. East side of the Cordillera.
Ranula brevipalmata. Cerro Utyum.
Mocoa assata. Old Harbour.
Mabuia alliacea. US 30619–20; from the low country.
Mabuia cepedei. Below Sipurio.
Chalcidolepis metallicus. US 30568; Provincia de Alajuela, Fila de Aguacate.
Amiva gabbiana. US 32614–16; Old Harbour.
Gerrhonotus fulvus. Summit of Cerro Utyum.
Sphaerodactylus glaucus. Near Sipurio.
Thecadactylus rapicaudus. North of Río Estrella or North River.
Anolis copei. Old Harbour (Puerto Viejo).
Anolis trochilus. Talamanca.
Anolis pachypus. US 30683; slope of Cerro Utyum.
Anolis oxylophus. US 30556–57; Costa Rica.
Anolis intermedius.
Anolis capito. Old Harbour.
Corythophanes cristatus. Sipurio.
Iguana rhinophila. Low country.
Basiliscus vittatus. Sipurio.
Basiliscus plumifrons. US 32622–6; Sipurio.
Xiphosoma annulatum. US 32580.
Boa imperator. Foot of mountains.
Leptognathus argus. US 30656; Sipurio.
Leptognathus pictiventris. US 30657; eastern Costa Rica.
Leptognathus nebulata.
Sibon annulatum. Old Harbour.
Oxyrrhopus plumbeus. Low country
Oxyrrhopus petola. Sipurio.
Leptophis aeruginosus. US 30684; low country.
Leptophis saturatus. US 32563; Sipurio.
Leptophis praestans. Sipurio.
Dendrophidium melanotropis. US 32597.
Drymobius boddaertii. Talamanca.
Herpetodryas carinatus. Low country.
Spilotes corias. Talamanca.
Spilotes chrysobronchus. US 30623; coast region.
Coniophanes fissidens. Sipurio and Old Harbour.
Rhadinaea decorata. Sipurio.
Erythrolamprus venustissimus. Sipurio.
Xenodon angustirostris. Sipurio.

Stenorhina ventralis. Old Harbour.
**Contia pachyura*. US 30618; Sipurio.
**Catastoma psephotum*. US 62972; Cerro Utyum, 5000–7000 feet (1525–2135 m.).
Elaps circinalis. Talamanca.
Teleurapsis schlegelii. Eastern Costa Rica, Old Harbour to 5000–6000 feet (1525–1830 m.).
Bothriechis nigroviridis. Cerro Utyum.
**Bothriopsis proboscideus*. Sipurio (type lost).
Bothrops atrox. Coast region.
**Lachesis stenophrys*. US 32479; Sipurio.
Sphargis coriacea. Puerto Limón.
Cinosternum leucostomum. Old Harbour and Sipurio.
**Chelopus gabbii*. US 45905.
**Chelopus funerus*. US 45900–01; 56134–35; Puerto Limón.

Old Harbour, located on the coast between Punta Cahuita and the Boca de Sixaola, is now referred to as Puerto Viejo de Limón.

A FINAL WORD

At certain levels both Warszewicz and Gabb were successful in their quest. The modern observer who has been over some of the same ground can only marvel at the courageous determination, dedication, and curiosity of these scientific pioneers. In regions sparsely settled, without roads or other communication, dominated by primitive and rugged terrain, demanding climate and debilitating disease, they still prevailed against all odds to open a new and exciting world to those that followed. They could do no more.

ACKNOWLEDGMENTS

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